

# Private Returns, Public Concerns

## Addressing Private-Sector Returns in Public-Private Highway Toll Concessions

Jennifer Mayer

Governments worldwide face increasing challenges in funding highway infrastructure with public capital. To meet the funding gap, policy makers are turning to public-private concessions for selected projects. These agreements are typically complex, long-term arrangements that entail the private sector agreeing to construct or rehabilitate a public access facility in exchange for rights to future toll revenues or other payments. In exchange for assuming concession risks, the private sector expects a commensurate return. But public procurement officials face real challenges in determining a fair distribution of risks and rewards, as well as in handling the public's perception of such agreements. Placing strict limits on private-sector returns can undermine incentives for construction, financing, and operating efficiencies that are an integral part of the value that can be achieved through public-private concessions. Furthermore, any such limits may not even be effective unless all aspects of a concession that can generate profits, such as refinancing, are addressed and the methodology for the calculation of returns is carefully specified. This paper examines various approaches used by procurement officials to address real and perceived private-sector returns in highway concessions. While special focus is placed on revenue-sharing provisions, other concession features that affect returns are also discussed, including tender structure, bid selection, and negotiated contract terms and prohibitions. The analysis includes discussion of specific revenue-sharing provisions in two U.S. concessions and one Irish concession, as well as a general discussion of the approaches taken by several European governments to address returns in their concession programs.

Governments worldwide are facing increasing challenges in funding highway infrastructure with public capital. To meet the gap, policy makers are turning to public-private concessions for selected projects. These agreements are typically complex, long-term arrangements that entail the private sector agreeing to construct or rehabilitate a public access facility in exchange for rights to future toll revenues or other payments.

In exchange for assuming additional risks in a public-private concession, the private sector expects to earn a commensurate return. But public procurement officials face real challenges in determining (and negotiating) a fair distribution of risks and rewards in such transactions. These officials also face a public relations challenge in

terms of how the private-sector returns are perceived by the public over the life of the concession.

This paper examines approaches used by procurement officials to address real and perceived private-sector returns in highway concessions. While special focus is placed on revenue-sharing provisions, many features of a concession affect potential returns, including the structure of the tender, methods for bid selection, and negotiated contract terms and prohibitions. This paper includes discussion of specific revenue-sharing provisions in two U.S. concessions and one Irish concession, as well as a general discussion of the approaches taken by several European governments to address returns in their concession programs.

### BASIC CONCESSION FRAMEWORK

Although numerous public-private partnership models have been developed over time, this discussion is limited to real toll highway concessions that involve at least partial transfer of traffic and revenue risk, and near-complete transfer of construction and operating risk. Generally, such a transaction is structured as a long-term lease. In exchange for construction of a new or upgraded facility, or payment of an acquisition fee for an existing facility, and for assuming the numerous business risks of maintenance and operation, the private sector entity expects to earn a return on its investment. The facility generally reverts to public ownership after the expiration of the lease.

### Long Concession Terms: Public and Private Benefits

Terms of highway toll lease concessions have ranged from 25 to 99 years. From the public-sector perspective, longer-term arrangements can provide several benefits. For example, the United Kingdom selected 30-year terms, allowing 20 years for debt repayment, with a buffer in case of slow ramp-up. The 30-year term was also allowed for whole-life costing of the asset and provides incentives to build the asset initially to a higher standard to reduce maintenance and operating cost during the life of the project (1).

From the private-sector perspective, long-term arrangements can allow for better financing options, including depreciation of leased assets under some countries' tax structures. The longest-term arrangements can permit concessionaires to arrange for corporate, rather than project financing, improving project viability. Corporate financing is typically cheaper than project financing because it assumes

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*Transportation Research Record*, Journal of the Transportation Research Board, No. 1996, Transportation Research Board of the National Academies, Washington, D.C., 2007, pp. 9-16.  
DOI: 10.3141/1996-02

that the toll road venture is an ongoing business (akin to IBM or Ford) rather than a single project.

### Public Concession Goals: Value for Money

The public sector's goal in embarking on such concessions is generally to obtain the best value for the money in developing infrastructure. Before entering into a public-private concession, many countries require a public-sector comparator that estimates the costs and benefits of undertaking the project as a conventional procurement. This comparator is an important part of a value for money (VFM) analysis that will demonstrate how the public-private model may add value compared to a public-sector development alternative. This VFM is essentially the return that the public sector expects for entering into the concession arrangement. The VFM can be created by several aspects of the transaction, including private capital availability, risk transfer, and efficiencies. More detail about each of these aspects is presented below.

#### *Reducing Public Debt and Conserving Public Capital*

Public-sector motivations for entering into concessions include the desire to conserve limited capital. This has become particularly important in some areas of the European Union seeking to meet strict public debt and deficit targets set under the Maastricht treaty that created the European currency union. Entering into public-private concessions can in some cases transfer infrastructure debt off of the public budget. By harnessing private equity, the transactions can conserve limited public capital for other governmental purposes that may not have the potential for private equity involvement. In some cases, this form of return is difficult to quantify, because without the private equity contribution, a project may simply not be feasible given budget constraints.

#### *Transferring Risks to the Partner Best Able to Manage Them*

In the idealized public-private model, design, construction, financing, traffic, operating, and other risks are transferred to the parties best able to manage them, resulting in lowered pricing of such risks, as well as potential management efficiencies. For example, transferring the risks of design, construction, and operation to the same private party allows that party to design and construct a facility for optimal operation. Allocating construction and traffic-revenue risk to the private partner provides significant incentives for prompt completion and traffic management of the facility.

#### *Economies of Scale: Efficiencies Gained from Private-Sector Operation*

If a private partner has numerous assets of a similar class, it may be able to construct and operate such facilities more cheaply. It may also benefit from prior experience managing the same type of facility, in ways that it could be difficult for a public operator of a single project to emulate. In the Chicago Skyway transaction in Illinois, for example, the Reason Foundation calculated that under public operation, the Chicago Skyway made an annual profit of \$8.4 million—a return of 0.4% on the asset value, as estimated by the acquisition price (2). Some proceeds from the up-front fee for a 99-year asset lease were

used to repay long-term debt that cost the city approximately 5 percent, leading to annual savings on debt-service payments. These kinds of cost savings could also be included in a VFM analysis.

#### *Long-Term Provision for Operation and Maintenance of a Facility*

In the United States, many categories of state and federal aid funding are restricted primarily to initial capital construction. When finance plans are created for conventionally procured projects, the focus is typically on initial construction rather than long-term maintenance or operation. The VFM model of a public-sector comparator requires estimation of these longer-term costs and demonstrates that a public-private transaction can remove not only debt from the public ledger but also future obligations for maintenance and operation.

### Private Concession Goals: Return on Investment

Private equity seeks to maximize profit, and will not enter into a transaction without the prospect for a reasonable return. While perceptions of "reasonable" returns vary considerably, reported returns for mature projects with stable traffic history can range from 7% to 9%, whereas desired returns for developmental, greenfield projects are typically 10% or higher (3). The desired return depends on an evaluation of project characteristics, country equity market and political characteristics, and the particular business risks associated with a concession.

A common method for estimating prospective returns on a capital project requiring up-front investment, followed by future streams of revenues, is calculation of the financial internal rate of return (IRR). Guidance from the UK Treasury Office includes an extensive discussion of the use and calculation of IRRs in public-private projects. According to its guidance note, "The IRR is defined mathematically as the discount rate, which, when applied to discount a series of cash outflows followed by cash inflows, returns a net present value (NPV) of zero. The most intuitive way of understanding the meaning of the IRR is to think of it as an equivalent constant interest rate at which a series of cash outflows must be invested in order for the investor to earn a given series of cash inflows as income. It is in this sense a measure of the underlying return the private sector expects to achieve by investing in the project" (4). While IRR calculations are indeed a useful tool for analyzing potential returns, there are significant complexities in using IRR to regulate or limit returns, as discussed in more detail below.

### CONCESSION DILEMMA: EVALUATING THE DEAL

Private equity will not participate in transactions without the potential for return. Yet policy makers face a critical public perception dilemma in designing public-private concessions. If the concessionaire achieves too high a return (as perceived by the public), the government may be criticized for leasing a public asset too cheaply. This perception can arise regardless of the economic conditions that prevailed when a contract was initially negotiated, the value that the private partner brought to the transaction, or the real risks that were assumed (and presumably managed) by the private partner.

Yet if a concession underperforms financially, it can also be perceived as a public policy failure, even if the private partner absorbs

the financial consequences. The fact that a concession failed to meet financial targets can be regarded as evidence of a poorly framed transaction, even if it successfully transferred financial risk to the concessionaire. Moreover, when a project fails to achieve acceptable private returns, it may discourage future public-private transactions for years to come by making equity, lenders, insurers, and other capital market participants leery of such transactions.

### Evaluating a Deal over the Long Term

Long concession terms make it more difficult to evaluate the outcome of a highway concession at the time of negotiation, or even at specific points during a concession. The initial terms may be negotiated based on economic conditions that then change significantly over the life of the concession. While this is true of any business negotiation, when public assets are involved an outcome that results in additional profits accruing to the private sector can be regarded as unsuccessful, even if significant overall value was provided to the public.

### Negotiating a Deal Under the Spotlight

If a government made what was perceived to be a poor deal in a conventional procurement, the criticism and financial impact would be limited to the term of the project (and ideally, to the political term of the government that negotiated the transaction). In longer-term conventional procurements, risk levels would also typically be lower, leading to lower expected returns that raise less controversy. It is also the case that in conventional procurements the public does not usually get the opportunity to review or estimate the returns made on a specific transaction. Whether a construction company makes an RR of 5% or 50% on a bid is not usually considered a matter of public policy, unless the bid process itself is considered questionable. However, the long-term and higher-risk return profile of public-private deals ensure a high degree of scrutiny, perennial discussion, and constant reconsideration of the fairness of the transaction.

### Negotiating a Deal Under Volatile Forecasting Conditions

The public policy dilemma is exacerbated by the difficulty of projecting future financial performance of toll road projects. "It is in the nature of toll road concessions that they rarely turn out to be financially dull. More often than not, they are either extremely profitable, or are financial failures" (5). Over its full term, a toll concession can actually wind up being both, with low initial returns eventually giving way to profitable traffic levels. If a project follows such a pattern, the public and the media in the later stages of the contract are likely to focus on the high traffic levels and the profits then being made, rather than on the years of development, investment, and ramp-up that went into the project. Having the public sector, through some of the revenue sharing options described below, share in the profits that result from the high traffic levels may remedy the public perception.

### Addressing Downside Volatility

While the potential for high returns receives the most public scrutiny, any toll concessions are not even feasible without some form of initial public subsidy. For example, the French government's con-

cession process recognizes the need for public equity "due to the fact that motorway concessions now launched are not intrinsically profitable in financial terms (traffic flow too low) they usually require public funding" (6).

Even in cases in which financial analysis of a project shows the potential for financing without a public sector subsidy, unrealistic traffic projections, possibly caused by an optimistic bias in traffic studies, can make the private sector reluctant to assume full revenue risk, especially for greenfield projects (7). Recognizing this, many governments offer flexible financing, or design concessions with features that compensate for the downside risk, effectively sharing part of the risk with the concessionaire.

### Addressing Upside Potential

In a long-term concession there is also the chance that traffic will exceed initial estimates at some point. So-called windfall or super profits can occur either when a toll concession is leased for a fixed, up-front price based on an underestimate of future traffic or when revenue-sharing provisions in a contract do not adequately take into account the potential for traffic to substantially exceed initial projections. While windfall is a subjective term, it is generally understood to mean a profit that is both unexpected and disproportionate to the level of risk assumed by the concessionaire.

Although rare, windfall profits can have an effect on public opinion that is disproportionate to their overall impact on the VFM of a specific public-private transaction, or on public-private transactions in general. Even if the public sector realizes significant benefits from a toll concession, the perception that the private sector is receiving substantial, unexpected returns from a public asset—without commensurate public returns—can create a perception of unfairness that could deter future concessions. Contract provisions that place controls on windfall profits, or at least provide for revenue sharing, can protect against poor public perception of a transaction, both at the time a concession agreement is made, and in the future, when the public officials who negotiated the original arrangement may no longer be in office.

### The Challenge: Achieving Value and Reasonable Returns Without Undermining Innovation

Part of the value of a public-private model is its ability to foster innovation by harnessing the profit motive of the private sector. Excessive, specific limits on returns can undermine incentives for construction, financing, and operating efficiencies that are integral parts of the value that can be achieved through public-private concessions. In any case, placing specific limits on internal rates of return may fail to effectively limit returns unless all features of a concession that can affect private-sector returns, such as refinancing, are addressed.

The following sections briefly discuss aspects of concession structure, selection, and negotiation that can affect real and perceived private-sector returns.

### ADDRESSING RETURNS IN CHOICE OF CONCESSION STRUCTURE

The initial choice of concession structure or development model fundamentally affects how returns accrue to the private sector.

## Models That Retain Revenue Risk for Public Sector

Transactions in which the public sector retains the traffic risk and toll revenues, or in which toll revenues are not featured (such as availability payments), cap the upside return of a public-private transaction. While these models eliminate windfall potential, they also lack the efficiencies that can be gained by transferring risk to the concessionaire.

### Fixed Up-Front Fees: Risk of Seller's Remorse

Transactions that entail one-time, up-front fees for long-term concessions (such as the Chicago Skyway or Highway 407, Canada) insulate the public sector from downside traffic risk but do not permit the public sector to share in upside potential. There is no way to protect against or mitigate windfall profits under a pure fixed-fee model; if traffic levels substantially exceed initial projections, the public sector will not share in the gain. At the same time, if the project underperforms, the public sector will not share in the losses.

In the case of Toronto's Highway 407, the Ontario provincial government leased the asset for 99 years for an up-front fee of \$3.8 billion in 1999. In 2002, one of the owners of the road was able to sell its stake for four times the acquisition cost; the profit led to criticism of the original sale price by the opposition party, which took power after the transaction (2). With fixed up-front fees, debates about undervaluation of assets can arise when the original sale price, which was determined at a particular point in time, is compared to a future valuation. Like a homeowner who doubles his money in a sale but then regrets his decision when property values continue to rise, the public may focus on the continued rise in valuation of an asset over time. This perspective ignores the risks and the operating and acquisition costs that have been assumed in the transfer, as well as the fact that current valuations do not necessarily reflect future performance of the asset.

### Dynamic Concession Models: Sharing in Future Revenue

In contrast to a fixed-fee model, models that include residual revenue sharing, rebalancing, and other contract provisions that take effect in later stages of the contract may be particularly appropriate for protecting against the risk of windfall profits, ensuring that the public will share in at least some of any potential upside. Yet such a "dynamic" model can also mean that the public sector assumes some of the long-term traffic and revenue risks that would normally be fully retained by the private sector. If the public sector considers future revenue sharing as part of its initial concession fee, it is essentially taking on part of the traffic risk. A fixed fee would provide a more certain public-sector return, but a return whose value could then be continually questioned over the life of the concession.

## ADDRESSING RETURNS IN THE TENDER PROCESS

### Tender Structure

The structure of a tender or request for proposal process significantly affects potential returns. In a solicitation process, a government has the ability to either offer a subsidy, or require additional, unprofitable

elements to be built in conjunction with profitable ones. This ability to "bundle" projects can allow the public sector to reap an in-kind benefit in the form of a needed project. It could also allow the government to bolster a project with borderline revenue potential sufficiently to attract private-sector interest through the offer of a subsidy.

Under new European Union competition laws, European governments may not offer subsidies except as part of a public procurement process in which the subsidy or potential subsidy is made available to all bidders equally. Incorporating subsidy potential into the tender process allows competition to determine the true level of subsidy required to proceed with the project, maximizing value from the public perspective.

### Bid Selection

In solicited tenders, the criteria used to select bidders can substantially affect return levels. Some countries will base their selection of bidders on the level of revenue sharing offered by the private sector. For example, in Ireland, selection is based on the maximum net present value of a bid from the public-sector perspective, after pass-fail technical requirements are met. The private sector can offer some combination of an up-front concession fee and a share of future revenues to arrive at this total net present value.

In the initial Mexican concession process in the 1990s, preference was given to bidders that proposed the shortest concession terms. This was intended to minimize the length of time that private returns could be made on public concessions, but the effect was to hamper the financial viability of the winning concessions, leading to bankruptcies. These unintended consequences were addressed in later concession designs.

## ADDRESSING RETURNS IN CONTRACT NEGOTIATION

Contracts can also be negotiated to limit toll rates, control refinancing, or mandate revenue sharing. Finally, rebalancing provisions can be imposed that require readjustment of a concession as external variables change its financial or economic balance.

### Refinancing Provisions

Once the initial construction and operational risks have been successfully managed on a new project, toll concessions can often be refinanced to take on additional debt. As part of such a refinancing, additional capital may be returned to equity investors earlier, improving returns.

A number of European governments now limit the ability of concessionaires to refinance concessions without the permission of the public sector, and require that gains be shared if such permission is given. According to the United Kingdom's National Audit Office (NAO), in the Fazakerley Private Finance Initiative (PFI) prison contract, shareholders' expected returns increased by 75% following a refinancing (8). Similarly, the NAO found that in the Norfolk Hospital PFI transaction, shareholders' IRR increased from 18.9% at time of negotiation to 60.4% following a refinancing (9). While some refinancing potential in such cases may be earned through effective management of construction and operation, other benefits may arise solely because of market conditions. Even if part of the gain is because of construction and management efficiencies,

sharing such gains can help maintain the balance of the initially negotiated transaction, as well as the public perception of its fairness. Following the PFI transactions cited above and other similar cases, the United Kingdom established a policy that requires at least 50% gain sharing for refinancing of new concessions. Several other European governments have imposed similar requirements.

### Toll Rate Limits

Another way that the public sector can affect the level of private returns—and public perception of a concession's fairness—is to set limits on toll rates, toll rate increases, or both. While limiting tolls will not provide any additional compensation to a public agency, it will limit the amount that toll-payers provide to a project. This can improve public perception but can also inhibit the use of tolls for congestion management. If toll rates are severely limited, it can also affect the ability to finance the project at reasonable rates.

### Rebalancing Provisions

Some models rely on rebalancing a concession based on changes in the underlying economic conditions. Compensation can be paid between the public and the private sectors that will bring the contract back into the financial balance of the initial negotiation. But after an agreement is signed, political or legal disputes may make it difficult for the public sector to negotiate such a rebalancing. Rebalancing can also increase the ongoing monitoring and analysis burden on the public sector. In addition, aggressive bidders might offer higher amounts initially, counting on making up profits later during the rebalancing process.

### Dynamic Concession Terms

Dynamic concession terms are one way to address the traffic and revenue uncertainty associated with toll road ventures. French and Spanish concession models permit termination of a concession once an agreed-upon IRR is achieved. The United Kingdom's Dartford-Thurrock crossing transaction also featured a dynamic concession term. The concession was structured for a maximum of 20 years but could be ended as soon as the outstanding debt was repaid (2). However, IRR-based or debt-repayment-based concession terms may be difficult to audit because of asymmetrical information, as discussed below.

### Sharing of Residual Revenues

While each of the provisions discussed above substantially affects the actual public and private returns from the concession process, the following sections include some examples of revenue-sharing provisions that allow the public sector to participate directly in future project returns. In terms of public perception, the actual amount of revenue shared may not matter as much as the fact that the public sector is sharing in gains.

#### *Using Target IRR to Establish Appropriate Revenue-Sharing Percentages*

Assuming that the public sector adopts a concession model that allows for revenue sharing, the next step is to determine the appropriate percentages. In exchange for accepting concession risk, equity investors

expect a proportionately higher return. If the public sector demands a revenue share that jeopardizes this return, the private sector may refuse to enter into the concession at all. The private partner has incentive, however, to keep revenue sharing as low as possible in order to maximize equity returns.

While exact project IRR expectations vary on the basis of project risk and equity investor goals, the targeted equity IRR of a project should represent the level of return that the private partner feels is appropriate to the risks undertaken. Thus, tying revenue sharing to projected equity IRR levels may be one way to ensure that revenue sharing does not excessively limit equity returns. A progressive IRR-based revenue sharing structure can inhibit windfall profits by providing the public with an increasing share of revenues as higher IRRs are achieved.

If IRRs are included as part of a contractual process, the contract must define certain calculation methods. One key issue is the choice of a base for the IRR calculation. An IRR calculation based on cash flows to and from equity investors is generally termed an "equity IRR," while an IRR calculation using total project funds as a base is termed a "project IRR."

Another issue is whether the IRR will be calculated from real or nominal cash flows. Finally, the contract must specify whether the IRR will be calculated on a pre-tax or after-tax basis (4). The methodology should be chosen to fit the purpose of the IRR calculation as well as the content of the underlying cash flows. For example, the UK Treasury Office's standardization of PFI contracts recommends using a nominal, posttax, blended equity IRR for calculating refinancing gains for revenue sharing, but a real, posttax, blended equity IRR for calculating compensation in the event of termination or default (4).

In addition to the methodological complexities, using actual IRR as a basis for triggering revenue sharing can present a problem in terms of asymmetrical information. The private sector has the best knowledge of the factors and cash flows that will be used in an IRR calculation—financing, operational and other costs, and investments. If the public sector relies exclusively on the private sector to verify this information, it may be putting itself into a situation akin to the plight of Hollywood actors who agree to accept compensation in the form of a share of the "net" profits from movies. After agreeing to this particular form of revenue sharing, actors are sometimes surprised to discover that "film studios will often claim that profits earned by an otherwise 'blockbuster' movie are 'less than zero'" because of creative accounting practices employed by studios when calculating cash flows from films (10).

When negotiating an IRR-based contract provision, therefore, the public sector has to ensure that the factors that are included in the calculation are readily verifiable and that basic features of the IRR calculation methodology are agreed on before finalizing the contract.

#### *Gross Revenue Basis for Triggering and Paying Revenue Share*

Even though revenue-sharing bands have typically been established based on a financial analysis of the IRR of projects, some concession agreements trigger revenue sharing based on gross revenue targets, rather than IRR or net revenues. This approach

sharing such gains can help maintain the balance of the initially negotiated transaction, as well as the public perception of its fairness. Following the PFI transactions cited above and other similar cases, the United Kingdom established a policy that requires at least 50% gain sharing for refinancing of new concessions. Several other European governments have imposed similar requirements.

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Even though revenue-sharing bands have typically been established based on a financial analysis of the IRR of projects, some concession agreements trigger revenue sharing based on gross revenue targets, rather than IRR or net revenues. This approach

can significantly simplify auditing and overcome asymmetrical information issues. If revenue sharing is triggered only when a concessionaire reaches a target IRR, the public sector has to continually reevaluate the financial performance of the project during the life of the concession to determine if a revenue share is owed. For example, to verify a real IRR on a project, the public sector would have to verify actual costs paid by the concessionaire for project development. Such figures might be susceptible to manipulation through self-dealing, or any number of financial reporting techniques. In contrast, if a gross revenues target is used, the public sector merely has to verify traffic levels in order to conclude that revenue sharing should ensue.

But projected IRR is based on a number of assumptions unique to each project and concessionaire. To validate the base IRR calculated by a private-sector financial model, the public sector needs to verify the assumptions that underlie that model. Absent such verification, the expected IRR could be under- or overstated and could lead to incorrect calibration of returns between the public and private sectors if gross revenue is used to trigger sharing. For example, if the private sector overstated its initial financing costs, the anticipated IRR at a given level of revenues might be set at 11%, when the actual projected IRR should be 14%. If IRR levels are part of the bid evaluations, lenders will work aggressively with applicants to lower the IRR in every way possible, providing incentives to "game the numbers." This gaming effect could also occur during ongoing valuations—IRR analyses.

A distinction must be made, however, between initial verification of assumptions in the IRR model and unanticipated changes in any of the variables in the transaction for which the private sector retains the risk. The gross revenues proxy can effectively ensure that the private sector appropriately retains the risks of changes in construction, financing, operating, or other costs. If the private sector is able to achieve efficiencies in any of these areas, the additional returns would rightfully accrue to equity investors. By contrast, if unexpected cost increases occur, the equity investors would experience reduced returns, but the public's revenue share would remain the same.

### Examples of Revenue-Sharing Approaches

In some European countries (the United Kingdom, Ireland, and Spain, at a minimum), the private sector is asked to establish its own proposed revenue-sharing arrangements as part of the initial bidding process. In the Irish case and two U.S. cases profiled here, revenue sharing was negotiated after the successful bidder was chosen, as part of the overall contract negotiation.

#### *Revenue Sharing in Texas State Highway 130 Segments 5 and 6 Project (Austin Area)*

In 2006, the Texas Department of Transportation (TxDOT) signed an agreement for a \$1.35 billion toll concession project that will extend SH-130 for 40 mi from US-183 to I-10. The project will be leased to the concessionaire for 50 years after the road opens (projected for 2012).

Revenue-sharing provisions in the agreement signed by TxDOT for SH-130 were based on direct negotiations with the concessionaire, CINTRA/Zachry. TxDOT will receive an up-front fee of \$25 million, and an ongoing share of gross revenues. If traffic exceeds the pro-

jections in the base case of the project's financial model, the public sector will receive an increasing share of the gross revenues.

The equity return levels were established based on the concessionaire's base financial analysis of the project, including estimates for construction and operating cost and private-sector cost of capital. The public sector verified the financial analysis provided, using in-house and consultant expertise to review projections for operating, construction, and other costs, as well as financing assumptions.

In negotiating the revenue sharing, TxDOT requested that the private sector propose its own levels of sharing for three bands: from 0% to 11%, from 11% to 15%, and above 15%. The agency specified that they wanted a share from the first dollar, regardless of initial IRRs achieved. TxDOT also determined that it would share in half of all aggregate revenues that the concessionaire achieved above a 15% IRR; this policy ensured that they would receive a substantial share of profits beyond that level of return. The base model targeted a 12% IRR.

Table 1 presents the revenue sharing levels for each IRR (11). Like U.S. tax rates, the revenue shares are marginal, so there is no incentive for the concessionaire to keep revenues low in order to avoid sharing at a higher rate.

#### *Pocahontas Parkway (Virginia)*

The Pocahontas Parkway is an 8.8-mi roadway connecting I-95 at Chippenham Parkway in Chesterfield County with I-295 in Henrico County near Richmond International Airport in Virginia. Initially constructed for \$324 million in 2002, the project had failed to meet toll projections and required an additional infusion of capital in order to complete an airport connector. In 2006, the Virginia Department of Transportation accepted an unsolicited offer for a 99-year lease of the project from a private concessionaire. The concession contract signed in June 2006 provides for gradually increasing revenue sharing on the basis of attainment of specified levels of IRR on total invested project funds (Table 1) (12).

The total invested project funds are defined as all amounts paid for the acquisition and capital construction of the project, net of distributions made to equity. Unlike the Texas transaction, the IRRs in this case are calculated on a wider base, rather than just on invested equity. Because the base used to calculate IRR is so much larger, the IRR targets are proportionately smaller, and within

**TABLE 1 Revenue-Sharing Provisions: SH-130 Segments 5 and 6 (11) and Pocahontas Parkway Agreement, June 2006 (12)**

Equity Return—Texas State Highway 130, Segments 5 and 6	Gross Revenue Sharing to TxDOT (%)
Return < 11%	4.65
11% ≤ return < 15%	9.3
Return ≥ 15%	50
Internal Rate of Return—Pocahontas Parkway	Aggregate Revenue Sharing Percentage to VDOT
Return < 6.5%	None
6.5% ≤ return < 8%	40 of aggregate revenue
Return ≥ 8%	80 of aggregate revenue

a tighter range, than in the TxDOT transaction. The revenue sharing is also triggered by real net cash flow, not aggregate revenue, which will require periodic review of audited statements from the concessionaire (13).

#### *West-Link Toll Bridge (M-50, Dublin Area, Ireland)*

In 1987 the Dublin County Council entered into an agreement for a 3.2-km public-private toll bridge crossing the River Liffey in Ireland. The bridge is part of the M-50, a 40-km orbital motorway around the Dublin metropolitan area. The agreement provided for sharing of gross toll revenue (GTR) between National Toll Roads Ltd. and the state when traffic levels exceeded 27,000 vehicles annually (14).

By 2001, the traffic had increased sufficiently to justify the need for an additional, parallel bridge. In exchange for revising the toll-sharing provisions on the first bridge, the company was granted a concession to construct this second bridge. The agreement added a fourth revenue-sharing band providing 80% of GTR to the state once toll traffic exceeded 79,000 vehicles (in 2001). To avoid future windfall profits, the new band was set at 6.5% above traffic projections. The traffic level for the fourth band will be gradually increased until it reaches 126,000 in 2020 (Table 2).

For the first 5 years of operation, the facility failed to meet initial traffic estimates. In 1997, following construction of a new section of the M-50, and partly due to the booming Irish economy, traffic volumes increased, and by 2004 the traffic was more than 2.5 times the original estimate.

According to a report by the Auditor and Comptroller General of the Republic of Ireland, at the time the agreement was made the concessionaire estimated an after-tax return of 18%, while government bonds were yielding approximately 15%. By 2005, the Auditor and Comptroller General estimated the return on the project at 24%. Part of the increased return resulted from changes in the Irish tax code, which reduced the corporate tax rate from 50% (in 1987) to 12.5% (in 2003). Since the initial agreement considered the anticipated taxes as part of the government's compensation, the fall in tax rates led to a decrease in overall revenue paid to the public sector (14).

While the public perceives the project as earning "excessive" profits for the concessionaire, a report commissioned by the concessionaire contends that "the State in fact negotiated a very beneficial and far reaching deal on the West-Link. It took none of the commercial risk, but [is] gaining significantly from the upside. . . . Between license fees, Value Added Tax, corporation tax, and municipal rates (tax), the state is now taking over 50% of the gross toll revenue collected on West-Link, and this is expected to reach 65% by the end of the concession period" (5).

**TABLE 2 Initial Revenue-Sharing Provisions:  
West Link Toll Bridge (1987) (14)**

Average Daily Traffic Limit	Gross Toll Revenue Share to State (%)
≤27,000	0
27,001–35,000	30
35,001–45,000	40
Traffic ≥ 45,001	50

## COUNTRY PROFILES: ADDRESSING RETURNS UNDER VARIOUS CONCESSION STRUCTURES

### Spanish Concession Structure

Under the Spanish concession process, the public sector establishes upper and lower revenue bands for each concession (15). These bands are based on the accumulated present value of the revenues (APVR) obtained from the concession. These revenue bands are calculated on the basis of the public sector's initial analysis of the project, including estimated construction costs, traffic projections, and a discount rate that reflects the risk premium of the project. These bands then define boundaries for the maximum and minimum terms that may be offered by the concessionaire.

If the traffic and corresponding revenues are higher than predicted, the public sector has the right to reduce tolls. If revenue then continues to rise due to the toll decrease, and the actual APVR reaches the maximum limit for the ultimate year of the contract, the concession can be terminated early. These two limitations effectively address windfall risk.

### French Concession Structure

Current French concession contracts include a "return of good fortune" clause that mandates sharing of profits with public authorities (6). Contracts can also include a dynamic concession term. For example, the Millau viaduct contract features such a term. If the concessionaire achieves a specified IRR (based on the public-sector financial analysis of the project), the concession can be shortened to the minimum term allowed in the contract. This would limit the duration of any windfall profits.

### Irish Concession Structure

Under the Irish system, bidders propose a revenue share for each of five average daily traffic bands established in the tender document. To ensure that traffic risk remains with the private sector, only toll revenue beyond a specified base level may be offered by the bidder. This restriction was put in place after a bidder effectively transferred much of the traffic risk on a project to the public sector by offering most compensation in the form of future toll revenues.

After evaluating bids against pass-fail technical and quality requirements, the National Roads Authority selects the bidder offering highest net present value. Ireland also requires bidders to cap their own rates of return based on their own financial analysis of the project.

## CONCLUSIONS

Public-private transactions inevitably involve transfers of risks and rewards between the public and private sectors. There are numerous ways to structure and manage concessions that affect the level of private-sector returns. In designing and negotiating long-term concessions, public officials must consider not only the levels of potential private-sector return, but also the current and future public perception of such returns. Negotiated revenue-sharing provisions are one means for achieving equitable distribution of future risks and rewards but are by no means a guarantee that the public will perceive future

returns as equitable. Ultimately, the public and private outcome of such transactions has to be evaluated in light of the prevailing market conditions and the financial and risk analyses available to policy makers at the time a deal is made.

### ACKNOWLEDGMENTS

The author acknowledges the assistance of Declan McManus and Brad Watson of KPMG, Bryan Grote and James Taylor of Mercator Advisors, D. J. Gribbin and Karen Grosskopf of FHWA, Owen Whitworth of the Texas Department of Transportation, and Carrie Rosti of the Idaho Transportation Department.

The author also acknowledges the significant research opportunity presented by the 2006 international scan on audit and oversight of major projects, jointly sponsored by NCHRP, AASHTO, and FHWA.

The views expressed in this paper are the personal views of the author and do not represent official U.S. Department of Transportation or FHWA policy.

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*The Taxation and Finance Committee sponsored publication of this paper*